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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,518	11/10/2003	Gi Mun Kim	2060-3-55	4840

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EXAMINER	
JACKSON, BLANE J	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/705,518	KIM, GI MUN	
	Examiner	Art Unit	
	Blane J. Jackson	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,14,15,17, 18 and 20-26* is/are rejected.

7)☒ Claim(s) *11-13,16 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 20-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As to claim 20, it is unclear in which diode, the first, second or third short key diode "the short key diode" in line 8 of the claim is in reference to.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 14, 15, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Peterson (US 3,663,900).

As to claim 1, Peterson teaches a variable attenuator comprising:

A first attenuator for attenuating a RF signal according to a fixed voltage (figure 1, fixed negative voltage V1, positive potential and ground point (4) thru resistor (20), inductor (21) to PIN diode (16) comprising the first attenuator, column 2, line 54 to

column 3, line 32, this PIN diode attenuator is a configuration expected to manage low power broadband RF signals),

A second attenuator connected in parallel to the fist attenuator and attenuating the RF signal according to a control voltage for determining an attenuation mode (PIN diode (17) forms the key element of the second attenuator circuit, control voltage applied at (52) to inversely control the bias current through diode (16) and diode (17) to establish low, medium and high attenuation modes, column 3, lines 30-48 and function of the control voltage/ control circuit for attenuation control: column 4, lines 41-70).

A first impedance matching unit for maintaining input/ output impedance matching in the second attenuator (the input/ output image impedance is held essentially constant via the decreased AC impedance of the PIN diode (17) in combination with the fixed resistance of the resistors (12) and (13), column 4, lines 41-61).

As to claim 2, Peterson teaches the attenuator of claim 1 further comprising:

A second impedance matching unit for maintaining input/output impedance matching of the first attenuator (the input/output impedance is maintained (in the low attenuation mode) by the resistor inductor combinations (20-23) at the input/ output ports in combination with the low impedance of conducting PIN diode (16), column 4, lines 62-70).

As to claim 3, Peterson teaches the attenuator of claim 1 further comprising:

A first capacitor for removing serial current elements from an input RF signal and for providing the RF signal to the first attenuator (figure 1, capacitor (10) connected in series to the input port),

A second capacitor for removing serial current elements from an output signal of the first and second attenuators (capacitor (15) connected in series to the output port).

As to claim 4, Peterson teaches the attenuator of claim 1 wherein the first attenuator comprises a short key diode (figure 1, PIN diode (16)).

As to claim 5, Peterson teaches the attenuator of claim 1 wherein the fixed voltage is a power voltage divided by a certain level (Zener diode (50) establishes a fixed power level to the first attenuator circuit, diode (16) and biasing circuits, column 2, line 71 to column 3, line 4).

As to claim 6, Peterson teaches the attenuator of claim 1 wherein the RF signal flows to the fist attenuator in a low attenuation mode (figure 1, diode (16) is forward biased resulting in minimum forward impedance for the low attenuation mode of the RF signal, column 4, lines 62-70).

As to claim 7, Peterson teaches the attenuator of claim 1 wherein the RF signal flows to the second attenuator in a high attenuation mode (inverse impedance/ signal current relationship between diodes (16) and (17) where in the high attenuation mode,

diode (17) is biased to forward conduct while diode (16) is cutoff resulting in the RF signal is blocked by diode (16) and follows the lower impedance path through conducting and lower impedance diode (17), column 4, lines 41-61).

As to claim 8, Peterson teaches the attenuator of claim 1 wherein the RF signal flows to the first and second attenuators in an intermediate attenuation mode (figure 2, inverse relationship in biasing current (and impedance) of the attenuator diodes (16) and (17) that establishes a variable attenuator function: column 3, lines 31-48).

As to claim 9, Peterson teaches the attenuator of claim 1 wherein the second attenuator comprises a third capacitor connected in parallel to an input terminal of the first attenuator (figure 1, capacitor (11)).

As to claim 10, Peterson teaches the attenuator of claim 9 wherein the second attenuator comprises a fist short key diode for attenuating the RF signal transmitted through the third capacitor (figure 1, PIN diode (17)).

As to claim 14, Peterson teaches a variable attenuator comprising:

A first attenuator for attenuating a RF signal (the attenuator of figure 1 configured with signal input/output ports and PIN diodes indicates an RF small signal device) according to a first voltage (figure 1, fixed negative voltage V1, positive potential and ground point (4) thru resistor (20), inductor (21) to PIN diode (16) comprising the first

attenuator, column 2, line 54 to column 3, line 32, this PIN diode attenuator is a configuration expected to manage low power broadband RF signals),

A first impedance matching unit for maintaining impedance matching of the first attenuator in a low attenuation mode (the input/output impedance is maintained in the low attenuation mode by the resistor inductor combinations (20-23) at the input/ output ports in combination with the low impedance of conducting PIN diode (16), low attenuation mode is identified as PIN diode (16) is biased on and PIN diode (17) is biased off, column 4, lines 62-70).

A second attenuator connected in parallel to the first attenuator and attenuating the RF signal according to a control voltage for determining an attenuation mode (control biased PIN diode (17) forms the key element of the second attenuator circuit where a positive control voltage applied to connection (52) to inversely control the bias current through diode (16) and diode (17) to establish low, medium and high attenuation modes, high attenuation mode is defined as PIN diode (16) is biased off and PIN diode (17) is biased on, column 3, lines 30-48 and function of the control voltage/ control circuit for attenuation control: column 4, lines 41-70).

A second impedance matching unit for maintaining input/ output impedance matching in the second attenuator in a high attenuation mode (the input/ output image impedance is held essentially constant via the decreased AC impedance of the PIN diode (17) in combination with the fixed resistance of the resistors (12) and (13), column 4, lines 41-61).

As to claim 15, Peterson teaches the frst and second impedance matching units have the same resistance (figure 1 is a circuit to essentially maintain a constant image impedance at the ports of the attenuator, column 1, lines 14-24).

As to claim 17, Peterson teaches the attenuator of claim 14 wherein the RF signal flows to the first attenuator in a low attenuation mode and flows to the second attenuator in a high attenuation mode (control circuit maintains an inverse relationship between the direct currents (and resulting impedances) through the first and second attenuators circuits, the PIN diodes (16) and (17), column 3, lines 31-48).

As to claim 18, Peterson teaches the attenuator of claim 14 wherein the RF signal flows to the fist and second attenuators in an intermediate attenuation mode (figure 2, inverse relationship in biasing current (and impedance) of the attenuator diodes (16) and (17) that establishes a variable attenuator function: column 3, lines 31-48).

Claims 11-13, 16 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kossor (US 6,448,867), Davis (US 6,973,288), Ritchey et al. (US 6,919,774), Fukai et al. (US 6,028,647), Kosuga (US 5,126,703), Williams (US 4,097,827), Ludikhuize (US 4,047,131), Stanton (US 5,140,200), Verronen (US 5,204,643), Couvillon et al. (US 3,859,609), Dasilva (US 4,654,610), Marconi (US 4,754,240) and Gruneisen (US 6,091,299).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJJ

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